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|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/665,422 | KOBAYASHI ET AL. | |
| | Examiner | Art Unit | |
| | H.Jey Tsai | 2812 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1. ☒ This communication is responsive to paper filed on 9/28/04.
- 2. ☒ The allowed claim(s) is/are 1-5.
- 3. ☒ The drawings filed on 22 September 2003 are accepted by the Examiner.
- 4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- 5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 - 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- 7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date <u>11/24/04</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Examiner Amendment And Reasons For Allowance

Examiner Amendment

An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee.

This application is in condition for allowance except for the presence of non-elected claims 6-8. Accordingly, claims 6-8 are canceled.

The application has been amended as follows :

In the claims :

1. (Currently Amended) A method for manufacturing a piezoelectric element comprising:

a coating step of coating a substrate with a coating liquid for forming the piezoelectric element thereby forming a coated ~~film~~, film;

a drying step of drying said coated ~~film~~, film;

a preliminary sintering step of ~~preliminarily~~ sintering said coated film thereby forming an oxide ~~film~~, film;

a final sintering step of ~~finally~~ sintering said oxide film thereby forming a piezoelectric ~~film~~, film; and

a cooling step of cooling said piezoelectric ~~film~~, film,

wherein said ~~steps are~~ coating step is executed in the presence of a moisture-containing gas; ~~in said coating step said substrate has a temperature equal to or less than 50°C and the moisture-containing gas has~~ having a relative humidity of 60

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%RH or less at 25°C; 25°C, and, in said coating step, said substrate has a temperature equal to or less than 50°C,

wherein said drying step is executed in the presence of a moisture-containing gas having a relative humidity of 10 to 70 %RH at 25°C, and, in said drying step, said substrate has a temperature equal to or less than 200°C, and said relative humidity is 10 to 70 %RH;

wherein said preliminary sintering step is executed in the presence of a moisture-containing gas having a relative humidity of 70 to 100 %RH at 25°C, and, in said preliminary sintering step, said substrate has a temperature of 200 to 450°C, and said relative humidity is 70 to 100 %RH;

wherein said final sintering step is executed in the presence of a moisture-containing gas having a relative humidity of 70 to 100 %RH at 25°C, and, in said final sintering step, said substrate has a temperature of 500 to 800°C and said relative humidity is 70 to 100 %RH.

2. (Currently Amended) A method for manufacturing a piezoelectric film element according to claim 1, wherein the moisture-containing gas present in said preliminary sintering step, the moisture-containing gas present in said final sintering step, and the moisture-containing gas present in said cooling step each contains oxygen by 10 vol% or more.

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3. (Currently Amended) A method for manufacturing a piezoelectric film ~~film~~ element according to claim 1, wherein said coating liquid includes a raw material component of the said piezoelectric film, with said piezoelectric film containing at least one of Pb, La, Zr₁ and Ti as a constituent element.

4. (Currently Amended) A method for manufacturing a piezoelectric film ~~film~~ element according to claim 1, wherein said coating liquid includes a raw material component of the said piezoelectric film obtained by reacting (a) a metal alkoxide or a metal salt and (b) water in a solvent having a boiling point equal to or higher than 100°C or in a solvent containing such solvent.

5. (Currently Amended) A method for manufacturing a piezoelectric film ~~film~~ element according to claim 1, wherein ~~in the said cooling step, the~~ is executed in the presence of a moisture-containing gas having a relative humidity is of 70 to 100 %RH at 25°C.

6 to 8. (Cancelled)

Authorization for this Examiner's Amendment was given in a telephone interview and electronic communication with Mr. D. Vadnais on Nov. 29, 2004.

Reasons For Allowance

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The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The basis for the allowability is :

Prior art record does not teaches coating step is executed in the presence of a moisture-containing gas having a relative humidity of 60 %RH or less at 25°C, and, in the coating step, the substrate has a temperature equal to or less than 50°C, drying step is executed in the presence of a moisture-containing gas having a relative humidity of 10 to 70 %RH at 25°C, in the drying step, the substrate has a temperature equal to or less than 200°C, the preliminary sintering step is executed in the presence of a moisture-containing gas having a relative humidity of 70 to 100 %RH at 25°C, in the preliminary sintering step, the substrate has a temperature of 200 to 450°C, the final sintering step is executed in the presence of a moisture-containing gas having a relative humidity of 70 to 100 %RH at 25°C, and, in the final sintering step, said substrate has a temperature of 500 to 800°C.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h).

Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the customer service whose telephone number is (703) 308-4357.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679.

The fax phone number for this Group is (703) 872-9306.

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hjt

11/29/04

A handwritten signature in black ink, appearing to read 'H. Jey Tsai', located above the printed name.

H. Jey Tsai
Primary Examiner
Patent Examining Group 2800